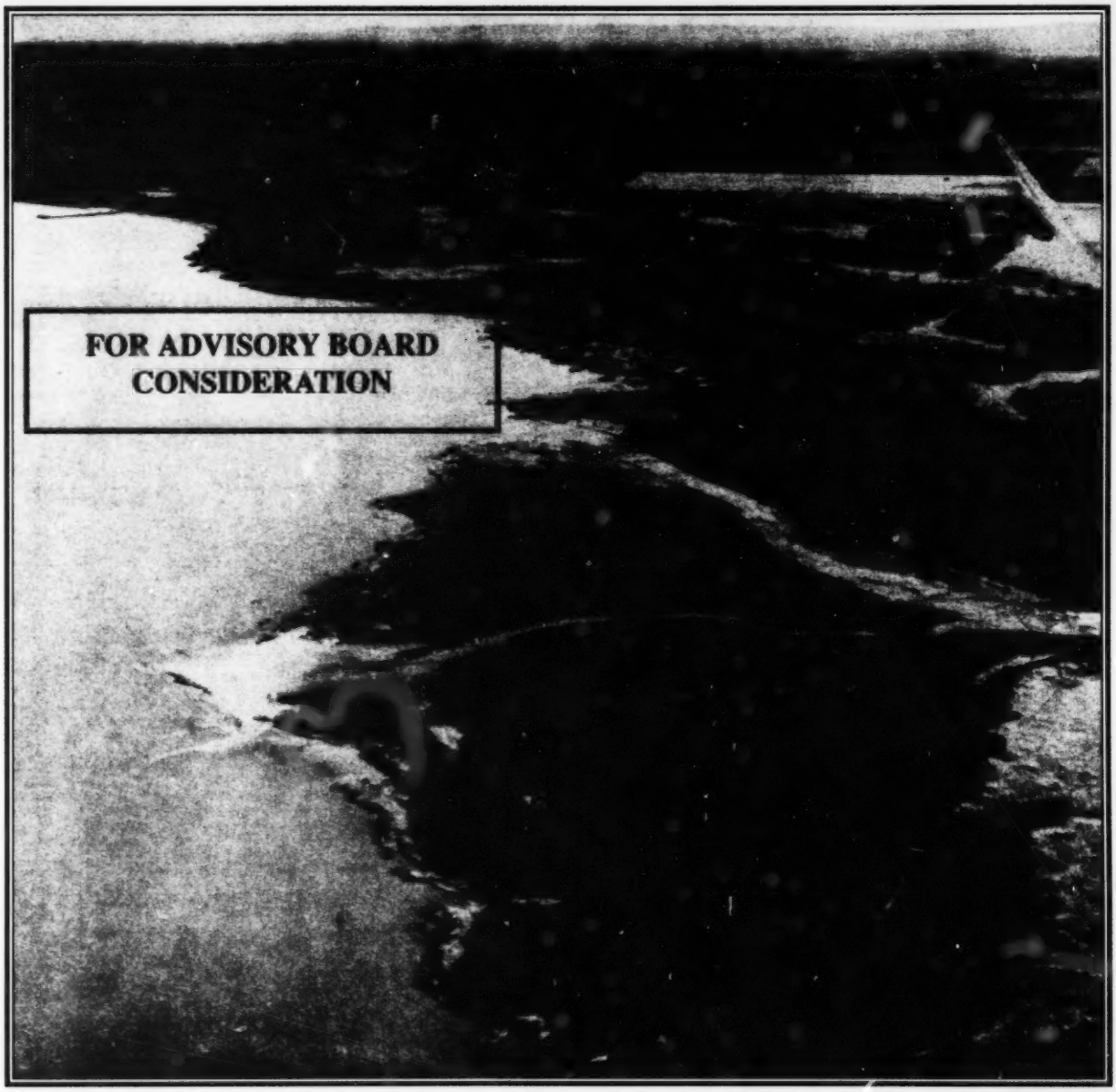
Dauphin Lake

Opportunities for Restoration



Delta formation at the outlet of Edwards Creek on Dauphin Lake

December 1989

Manitoba

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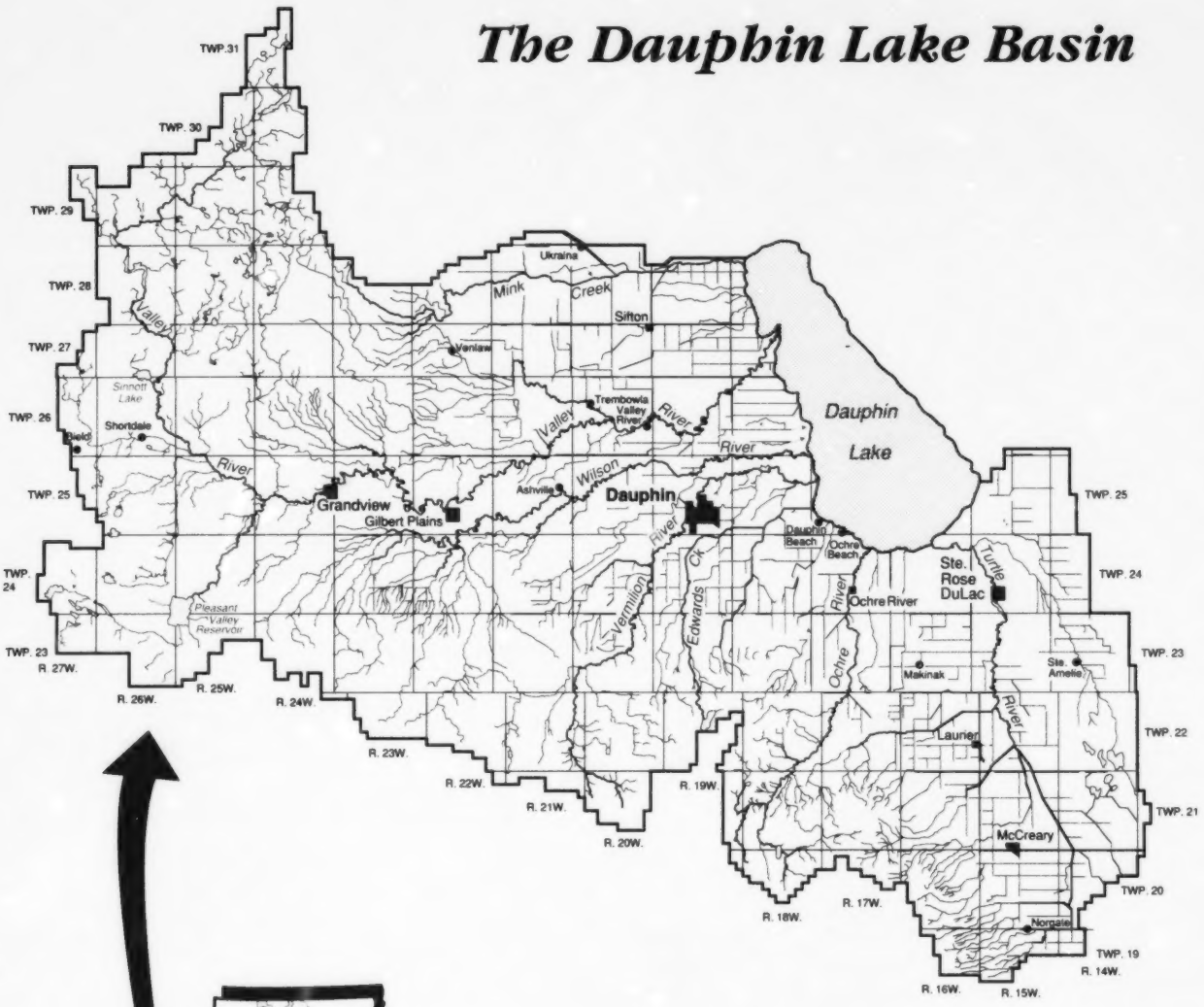
The Dauphin Lake Basin



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Reclaiming a ***Basin***

Some residents of the basin have suggested that the first initiative should be to raise the lake and dredge the outlet channel. Others say that this initiative would only slightly extend the life of Dauphin Lake and it would accomplish little in dealing with the causes of the lakes's deterioration. Postponing consequences to the next generation is seen as contrary to the ideals of sustainable development. Rather, we should arrest deterioration of Dauphin Lake as a top priority and then we should consider how to further enhance the lake in a way that will endure for generations.

THE FOLLOWING GOALS ARE SUGGESTED:

1. ***Halt the deterioration of Dauphin Lake by dealing with the key problems throughout the basin.***
   — The major causes of deterioration are erosion, siltation and nutrient loading.

2. ***Enhance Dauphin Lake once progress, with halting deterioration, is underway.***
   — Investment in this without progress on No. 1 will be shortlived and then there will be no future options for enhancement.

The health of the Dauphin Lake Basin is in jeopardy. The process of deterioration began accelerating in the 1950's and 60's.

Unchecked runoff has decreased the economic and environmental health of the land and streams. Siltation of Dauphin Lake and its spawning streams threaten an important fishery.

Tourism, fisheries, wildlife and other economic opportunities have suffered declines in the wake of basin deterioration.

The challenge facing resource managers is to halt ever increasing deterioration of the natural resources and land base that has been taking place throughout the Dauphin Lake Basin due to the interference of human activity. Once this deterioration of the basin has been stopped, or slowed to a manageable rate, efforts can be focussed on enhancing what is left. Development of the basin's resources could then proceed at a pace that satisfies current needs without jeopardizing the prospect of future generations. In short, further development of the basin would be put on a sustainable footing.

The Future of the Basin

A hypothetical look at the basin from the air some 30 years from now should help guide restoration of the lake and the basin lands that surround it. Viewers should be able to see evidence of a healthy agricultural economy throughout the basin with :

- *Tree-lined streams running clean and clear.*
- *Attractive recreational areas that draw visitors from near and far.*
- *A reliable walleye fishery in Dauphin Lake.*
- *Abundant wildlife.*
- *A healthy local economy/tourism industry.*

Government/Community Partnership Seen as Critical

A natural resource problem of this magnitude is not confined to single ownerships, single resources, or single resource users. Nor can it be solved by a single agency or group. It will take a partnership of government and the local community to agree on a course of action to help restore the health of Dauphin Lake .

Nursing the basin back to health is expected to take a combination of new and existing projects, some of which are inexpensive and short-term, others expensive and complex .

Programs could range from conservation education and public consultation, to basin research and altering use of marginal agricultural land, to water pollution control and aquifer management.

Most of the programs would have both public involvement and education components since the fate of the basin rests largely with the people who live there.

A Dauphin Lake Advisory Board,representing all interests in the basin, would be set up to develop an action and implementation plan for reclaiming the basin.

The Basin

Geography of the Basin

The Dauphin Lake Drainage Basin covers 3,250 square miles along the northern limit of the Parkland Region.

Major topographic features are the Riding and Duck Mountains, the Manitoba Escarpment, and Dauphin Lake.

Total basin relief is 1900 feet, 900 feet of which is concentrated at the escarpment with its steep slopes and deeply incised stream channels.

The basin is drained by seven major streams which empty into Dauphin Lake. The Mossy River drains Dauphin Lake into Lake Winnipegosis.

Dauphin Lake covers 200 square miles and averages seven feet deep.

Erosion throughout the basin and resulting sedimentation threaten the sustainability of the lake. Loss of spawning habitat and overfishing have reduced a once prime fishery in Dauphin Lake to a fraction of its former size.

Commerce and Economic Development

Population of the basin is about 20,000, with just over half living in the major urban centres of Dauphin, Ste. Rose du Lac, Grandview, Gilbert Plains and McCreary.

Basin economy depends primarily on agriculture. Cereal production is the main activity, with some forages and livestock production.

Service industries, secondary manufacturing, and tourism play a lesser but significant role in the basin's economy.

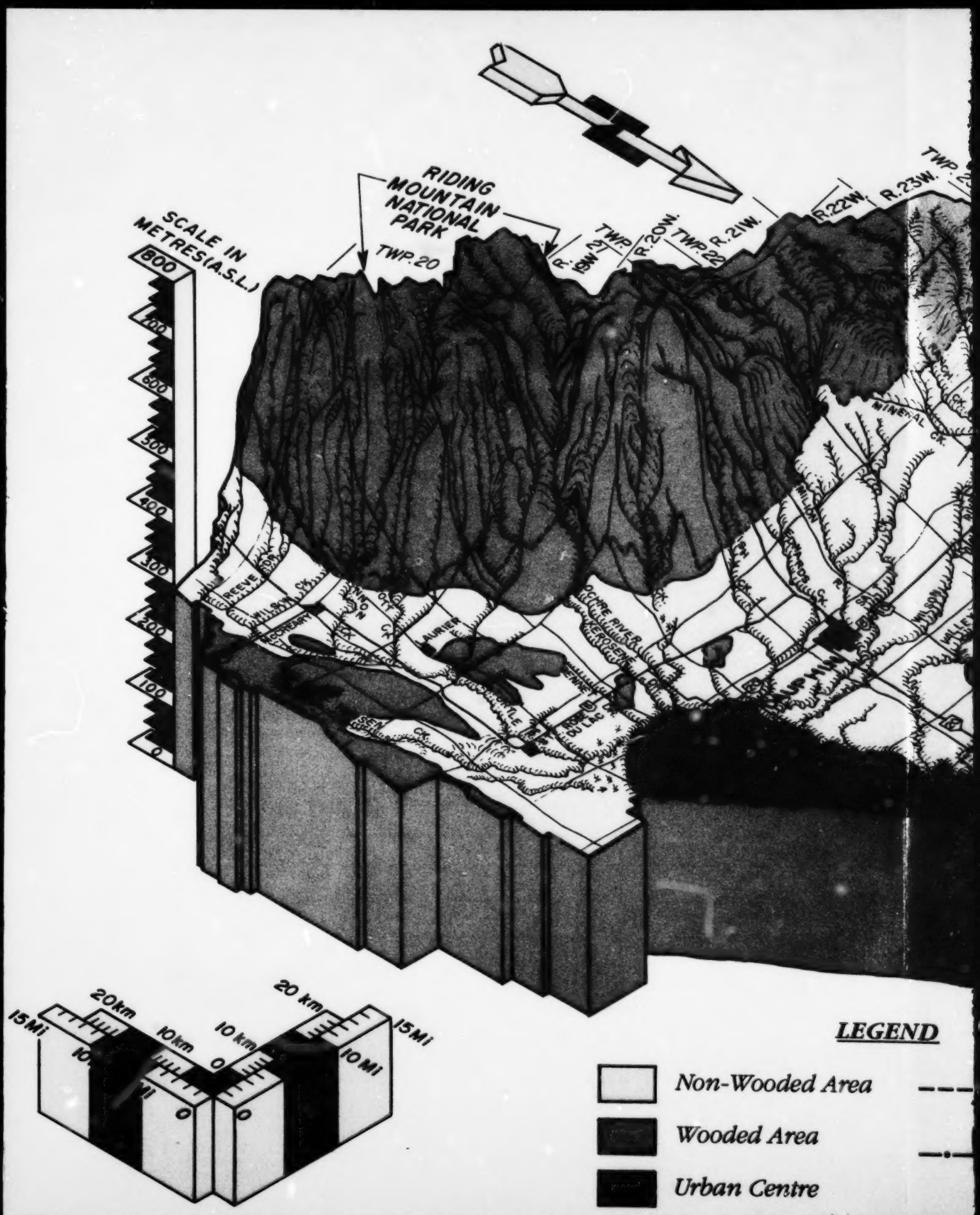
To rism currently focuses on the potential of Dauphin Lake, nearby Riding Mountain and Duck Mountain, and Lake Manitoba Narrows.

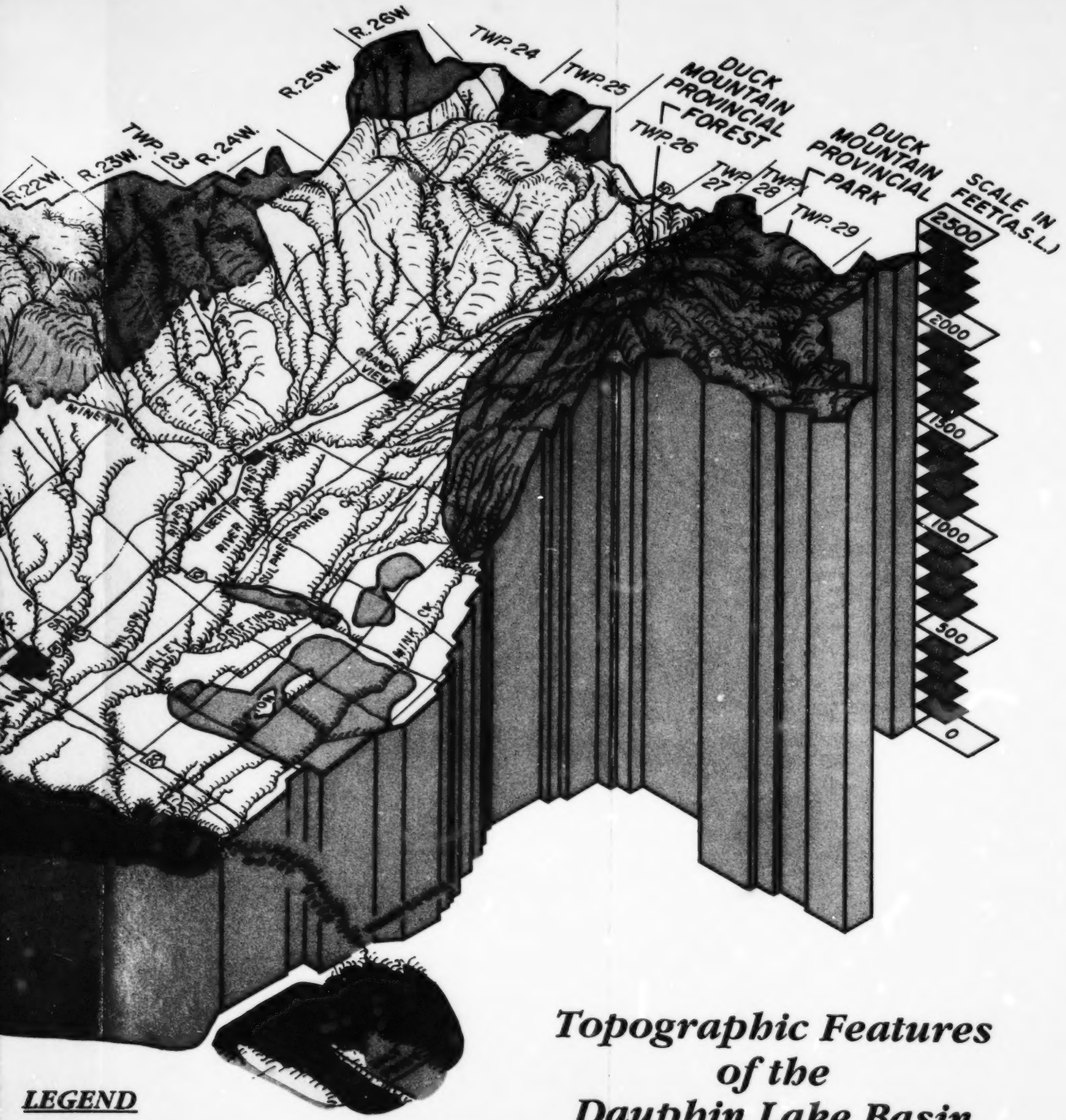
Facts and Figures

- *Dauphin Lake became a remnant of former Lake Agassiz only 10,000 years ago.*
- *In 1951, Dauphin Lake produced 200,000 pounds of Walleye; in 1986, 25,000 pounds.*
- *The Ochre River drops 446 feet in 27 channel miles from Riding Mountain National Park to Dauphin Lake. In contrast, the Red River drops only 21 feet through the same channel distance upstream of Lake Winnipeg.*

  These contrasting figures give some indication of the gravity of erosion problems that threaten the basin.
- *From 1948 to 1984, 35 miles of channel were lost along Edwards Creek and the Wilson and Vermilion Rivers due to channel cutoffs.*
- *Each year Dauphin Lake receives more than 500,000 tons of sediment — enough to cover a section of land to a depth of 6 inches.*
- *From 1948 to 1969, 124 square miles of woodland were converted to cultivated land in the Valley River watershed.*

The Manitoba Escarpment


RIDING MOUNTAIN NATIONAL PARK
TWP. 20
R. 19W.
TWP. 21
R. 20W.
TWP. 22
R. 21W.
R. 22W.
R. 23W.
SCALE IN METRES (A.S.L.)
800
700
600
500
400
300
200
100
0
RIVER
RESERVE
WILSON CK.
MONTGOMERY
ALRIER
ROSEAU RIVER
MINERAL CK.
20km
10km
0
20 km
10 km
0
15Mi
10 Mi
0
LEGEND
Non-Wooded Area
Wooded Area
Urban Centre



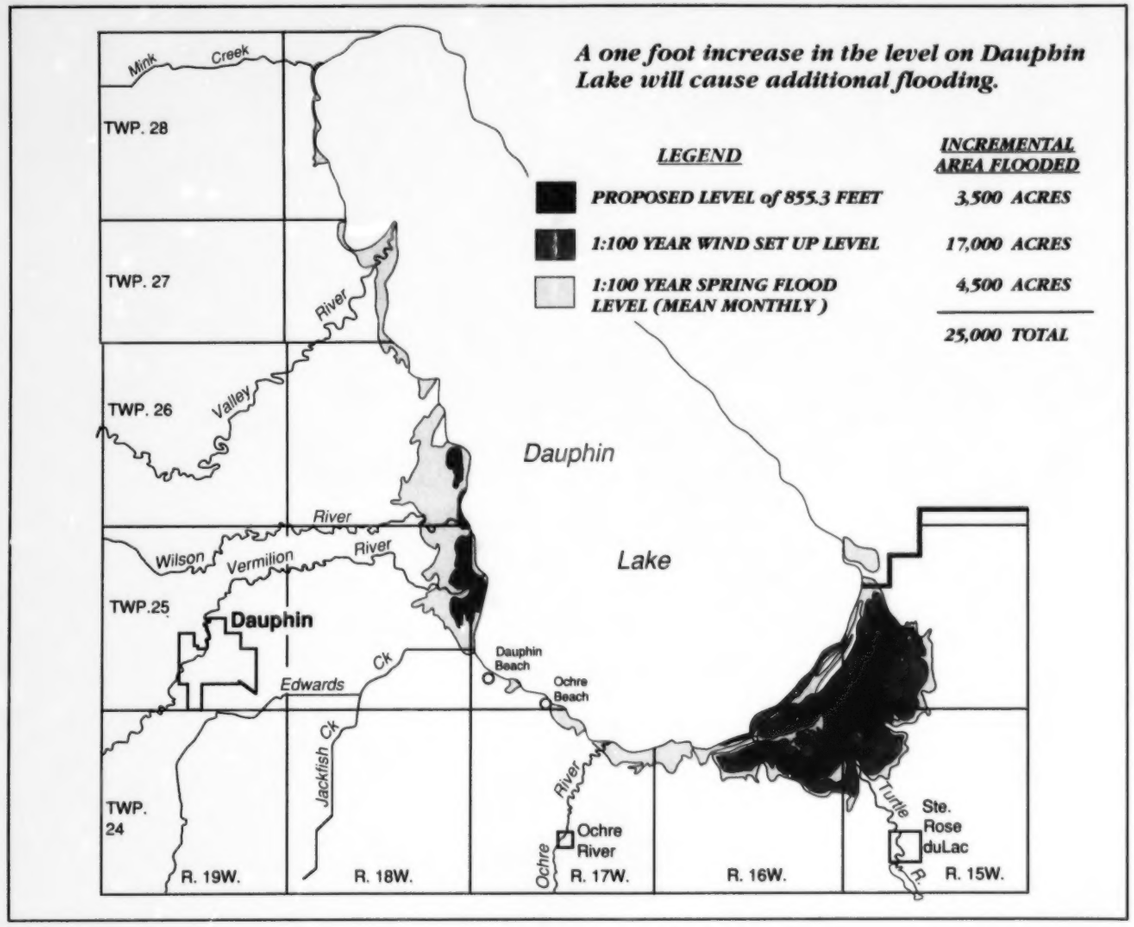
Topographic Features of the Dauphin Lake Basin

LEGEND

Area

Provincial - National Park Boundaries

Provincial Forest Reserve Boundary



Key Issues — Lake Regulation

Lake Regulation — Another Foot Would Make All The Difference

Dauphin Lake is currently regulated between 853.0 and 854.3 feet above sea level.

Studies have shown that raising the upper limit another foot, to 855.3 feet, would provide a variety of benefits;

- A higher lake level would enhance recreational opportunities by providing increased depths for boating and swimming. Algae growth would also likely be somewhat reduced because the increased water depth would lessen stirring of bottom silts by wind action and thereby reduce the amount of nutrient recycling.

- Indications are that a higher water level on Dauphin Lake would also enhance waterfowl production in the peripheral marshes.

However, a one foot rise in the upper range of regulation would result in additional land below 855.3 feet being flooded and also increase the amount of land periodically flooded by wind set-up and excessive runoff.

To offset these effects, land below 855.3 would have to be purchased. Land above 855.3, that might be affected by increased periodic flooding, would also have to be purchased or alternate land uses may have to be considered.

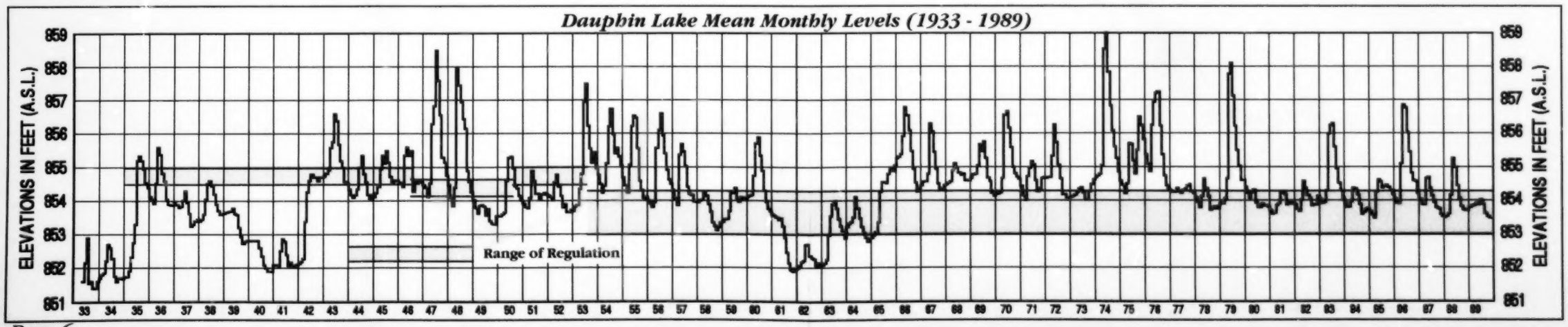
Improving the lake outlet to let water out faster would also help reduce periodic flooding from runoff.

One foreseeable measure would be to enlarge the Mossy River channel for eight miles below the Mossy River Dam, although this would disrupt fish habitat in the channel for several years.

Why raise the water level on Dauphin Lake?

A higher operating level would enhance ***recreational opportunites, reduce summer fish kill and enhance waterfowl and furbearer habitat*** *around the lake.*

The outlet capacity of the lake could also be increased by connecting Dauphin Lake to Lake Winnipegosis via the existing Rice Lake Drain. However, engineering investigations indicate that construction costs for this alternative would be substantially more than the Mossy River alterations.



Key Issues — Siltation

Siltation — The Critical Problem

The siltation of Dauphin Lake is the result of a serious erosion problem throughout the basin.

On average, about 500,000 tons of sediment per year enter into Dauphin Lake from tributary streams. Approximately 99 percent of this sediment remains trapped in the lake. This siltation, if left unchecked, will continue to reduce the average volume of the lake by some 4% per 100 years. At these rates the lake would be completely filled in about 2300 years and the surrounding area would become a low marshy area subject to frequent flooding.

Soil deposited in the lake originates from natural stream channels, degrading man-made drainage channels, particularly those that cross the alluvial plain area at the foot of the escarpment, and from the ever increasing cleared farm land in the basin.

Siltation is a prime concern for a number of reasons. Accumulation of sediment along stream beds and on the lake bottom can cover suitable fish spawning substrates and result in suffocation of incubating fish eggs. It also degrades the lake quality for recreation and tourism opportunities.

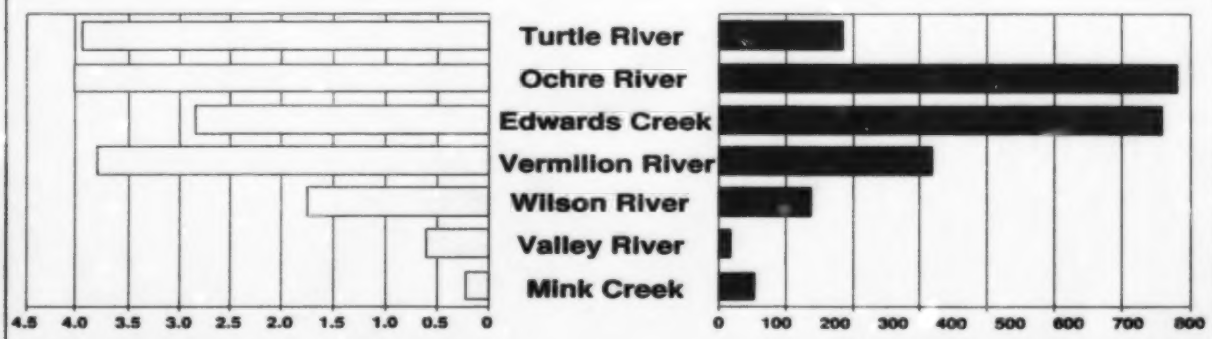
Where does the sediment come from?

*1. **Channel erosion** — erosion of the stream bed carrying away the bed material such as gravels, shales and silt.*

*2. **Bank erosion** — undercutting of the stream banks by swiftly flowing water eventually causes the bank to collapse and contributes to the overall sediment load.*

*3. **Sheet & gully erosion** — uncontrolled runoff from agricultural fields carrying away the topsoil.*

From 1950 to 1980 more than 17 million tons of sediment has entered Dauphin Lake. This is an average of about 500,000 tons per year over the 31 year period.



Total Sediment Deposited 1950-1980 (millions of tons)

Sediment Deposited Per Year 1950-1980 (tons per square mile per year)

Siltation cont'd

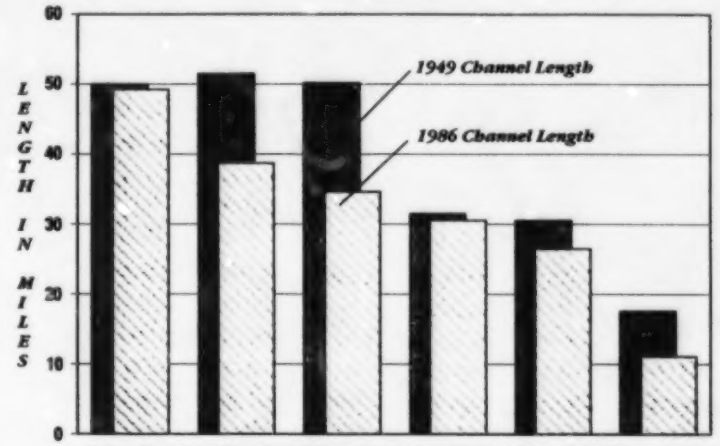
Land clearing and changing land use practices throughout the basin have rendered soils more susceptible to erosion by wind and water. It has also boosted runoff, causing greater runoff peak flows and channel erosion.

The straightening of stream channels, for purposes such as to aid in drainage, or to facilitate farm operations has increased channel slopes and velocities, resulting in increased bed and bank erosion.

Historically, alluvial fans at the base of the escarpment provided water storage capability and have acted as silt traps. Drainage and other stream development activities have increased runoff through the fans and the silt that formerly settled in these fans is now carried further downstream and much of it settles in Dauphin Lake.

Siltation has significantly contributed to serious declines in the fishery and reduced recreational opportunities. If left unchecked, it could threaten the economic sustainability of these activities.

Since 1948 some 41 miles of stream length has been lost in the Dauphin Lake Basin due to channel straightening. The resulting gradient increase has caused erosion of channel banks and beds, thereby increasing the overall siltation contribution to Dauphin Lake.

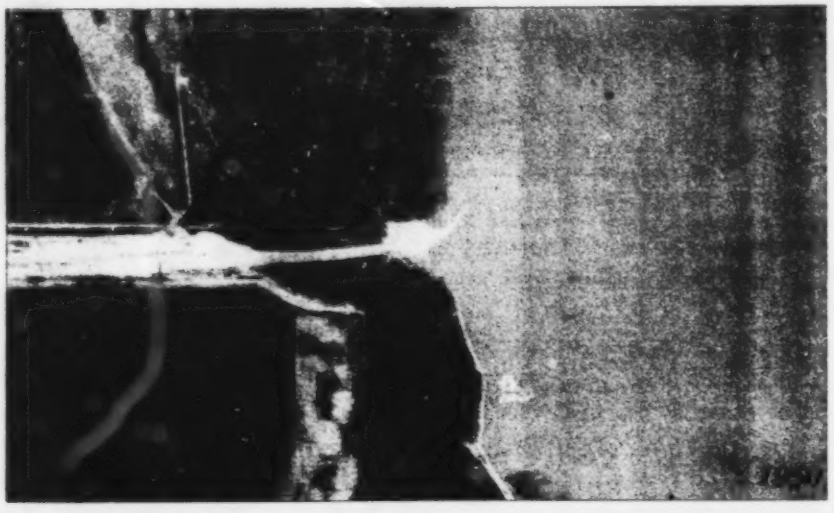


Oako Beach

Cottage sites "on" Dauphin Lake. Silt carried into the lake by Edwards Creek has formed a delta overgrown with vegetation (top left), blocking access to the Lake.

Edwards Creek Delta

A graphic example of the erosion and sedimentation problems plaguing Dauphin Lake. This delta took 12 years to form.



Key Issues — Water Quality

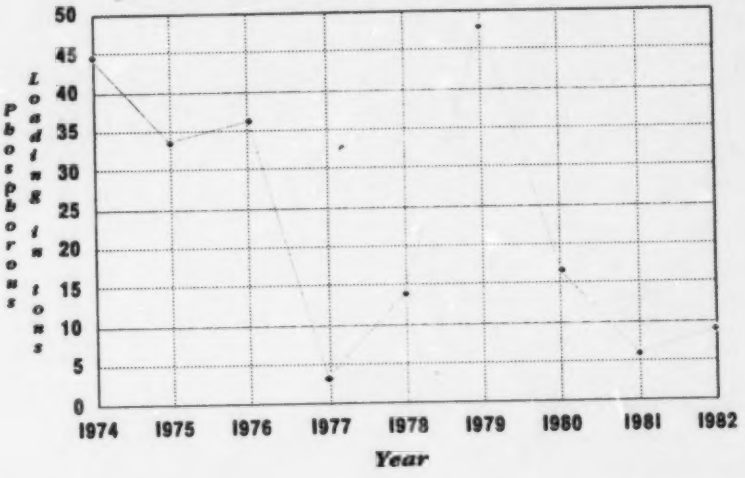
Siltation and nutrient overloading are the primary cause of the eutrophic conditions in Dauphin Lake.

Nutrients are of substantial concern because of the role they play in algae production. Nutrient overload promotes excessive algae production that can result in fish kill. The primary sources of nutrients are from agricultural fields and runoff from livestock operations. Domestic sewage, particularly from urban areas, is also an important source of nutrients.

Nutrients cannot be seen directly in the water because they are usually present in concentrations less than 0.0001%. However, the effects of the nutrients present is readily visible in the form of masses of algae. For example, two pounds of biologically available phosphorous can stimulate the growth of from one to eleven tons of algae.

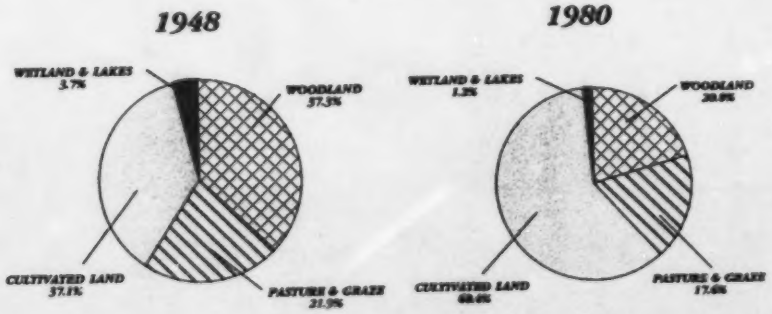
Since much of the nutrients reaching Dauphin Lake are bound to soil particles carried in the sediment, nutrient overload ing is directly proportional to the silt load and hence can be controlled by many of the same measures as that used for siltation. However, a proportionally greater load of biologically available nutrients is derived from animal wastes and in lake recycling. Hence, control measures must also include measures distinct from siltation control.

Phosphorous supply is usually the most important factor controlling the algae in lakes.



Limiting access of cattle to stream banks would lessen bank erosion and stream widening. Relocating feedlots away from streams would also improve water quality.

Cultivated Land in the Valley River Watershed has increased from 37% of the total in 1948 to almost 61% by 1980



What affects the water quality of Dauphin Lake?

1. Silt deposition *— Nutrients in the soil are carried by runoff from fields and are transported via major streams to Dauphin Lake with the silt particles.*

2. Animal wastes *— Animal waste from run off are carried by streamflow to Dauphin Lake where they recycle in the lake and produce algae.*

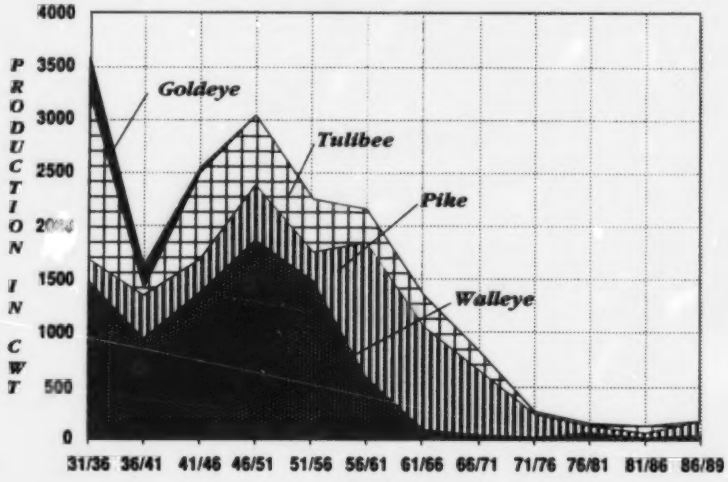
3. Sewage *— It is estimated that households in the Dauphin Lake basin contribute approximately 6-7% of the average annual total phosphorous loading into the lake.*

Key Issues — Fisheries

Dauphin Lake once supported a thriving and substantial commercial and sport fishery. The lake was regarded as one of the most productive in Manitoba.

In recent years production of the more valuable species has declined drastically. The resultant decrease in catches on the lake has produced a dramatic reduction in the economic performance of commercial and sport fisheries as well as negatively affecting the recreational potential in the area.

Catches of Walleye have decreased on Dauphin Lake from some 200,000 pounds in 1951 to less than 25,000 in 1986



The decline in the fish population of Dauphin Lake cannot be attributed to a single cause. Rather a combination of factors is responsible for the decline:

- Land Clearing — land clearing has resulted in higher stream discharges and increased erosion. Accumulation of sediment can suffocate incubating fish eggs and rapid runoff results in low flows and wide temperature fluctuations during fish spawning. For example, woodland has decreased from 37% of the total land area in the Valley River watershed in 1949 to less than 21% by 1980.

- Channelization — To accommodate higher discharges resulting from land clearing practices, stream channels have been enlarged, cleared and straightened, resulting in increased soil erosion and the destruction of natural spawning habitat. Since 1948 the total length of all tributaries in the Dauphin Lake basin has decreased by almost 18%.

Why has the fishery failed on Dauphin Lake?

The decline is due largely to ***destruction of the fish habitat*** *brought on by siltation, channelization, land clearing and other agricultural practices.*

Dauphin Lake has the potential to once again become a major fish producer. Steps have already been taken to limit the commercial quota for walleye and the sport limit for walleye has also been reduced. The Federal Department of Fisheries and Oceans has stocked over 50 million walleye over the past few years. At the same time, natural spawning habitat improvements have been undertaken on Mink Creek and also on the Wilson River by the Manitoba Habitat Heritage Corporation.

Proposals to further enhance spawning habitat could involve the replanting of riparian zone vegetation to reduce rapid runoff, the prolonging of spring and summer stream flows and the construction of in-channel spawning pools and riffles. The construction of a series of headwater retention reservoirs could serve as both fish rearing ponds and also provide a measure of control of inflow to Dauphin Lake. This would also work to lessen the current nutrient loading and siltation situation.

What Are We Doing Now?

The basin's natural resources are currently being planned and managed by various agencies and organizations, through a variety of programs and projects, with current spending at an estimated $1.1 million annually.

The current level of spending in the basin, and the number of good resource programs now in operation, present resource managers with an opportunity to get basin restoration underway without having to spend a great deal of time seeking funds or devising programs.

Recent Initiatives

Initiatives currently underway in the basin could provide a base on which to build programs.

• *Conservation Districts*
Turtle River Watershed Conservation District, along with Provincial grants spent $475,000 in the district in 1988 on various soil and water related programs. Projects include grassed waterways, soil conservation, gradient control structures, acquiring marginal lands, backflood irrigation, buffer strips, and weirs on Wilson Creek.

• *Agri-Food Programs*
The provincial and federal governments contributed funding to two projects in the basin in 1988. Approximately $36,000 was spent in the Turtle River Watershed Conservation District on various soil management projects such as grassed waterways, strip cropping and shelterbelts. About $31,000 was spent in the RM of Gilbert Plains in the On-Farm Management Program in an effort to reduce wind and water erosion of soil.

• *Habitat Heritage Corp.*
From 1986 to 1988 approximately $20,000 annually has been spent on various initiatives including land purchase and fish habitat enhancement. A series of pool and riffle structures were placed in parts of the Mink Creek and Wilson River. These structures improve spawning habitat for walleye and they appear to reduce stream bed erosion. Structures were installed in Edwards Creek in 1989 at a cost of $30,000, supplied in part by the Dauphin Lake Commercial Fisherman's Association.

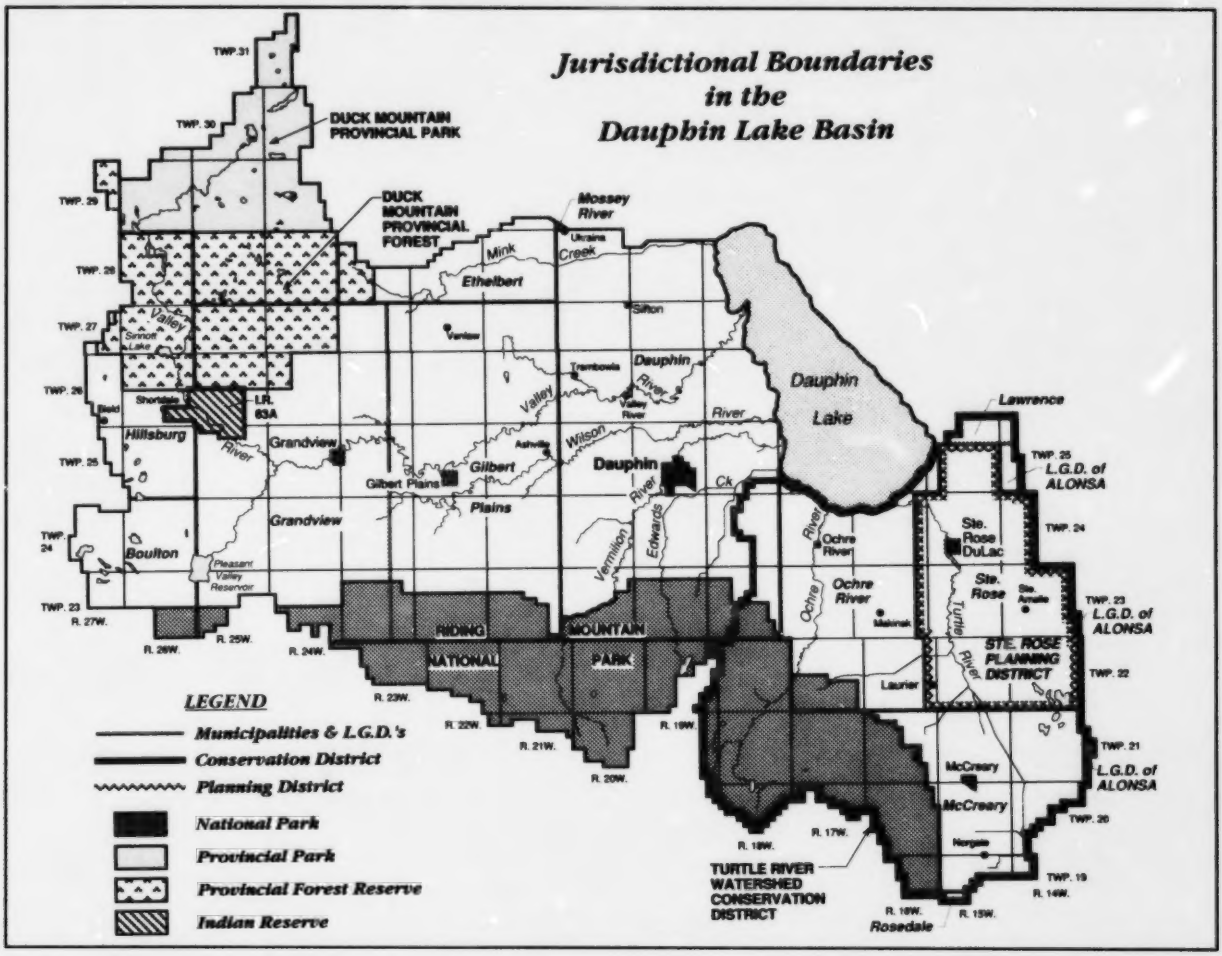
• *Manitoba Fisheries Branch*
The Manitoba Fisheries Branch has an active fisheries management program aimed at restoring the walleye population in Dauphin Lake. Features include reduction in commercial and sport walleye harvest and an increased harvest of pike, carp and other secondary species.

• *Water Resources Branch*
Spent some $500,000 on various water and soil related projects including drainage works and provincial dam operation and maintenance.

• *Canada Fisheries & Oceans*
The Dauphin Lake winter commercial catches are monitored annually to determine the success of the stocking efforts.

• *Manitoba Environment*
Baseline water quality monitoring of some inflowing streams; part of the program is conducted in cooperation with the Turtle River Watershed Conservation District.

Experimental "pool and riffle" reach *— Rehabilitation of fish spawning habitat is currently being undertaken on the Mink River.*



Other Possibilities

• *Soils Accord*
The Canada-Manitoba Soil Conservation Agreement will offer financial assistance to farmers to cover significant proportions of costs for on-farm soil conservation practices such as shelterbelts, conservation tillage, grassed waterways and other conservation practices.

• *Prairie Care Program*
Ducks Unlimited program aimed at restoring soil, water and wildlife on Prairie farms by offering a variety of incentives to adjust land use practices on any agricultural lands within the North American Waterfowl Plan. DU also has a program aimed at preserving Heritage Marshes or candidate marshes such as the Turtle River Marsh. This program is currently limited to the RMs of Boulton and Hillsburg.

• *Wildlife Habitat Canada*
Wildlife Habitat Canada's aim is to conserve, restore and enhance wildlife habitat by providing financial incentives to land-users that directly benefit wildlife.

• *Environmental Partners Fund*
The Government of Canada has set aside funds to help local groups take action in protecting, preserving, enhancing and restoring the environment at the local level.

• *Special Conservation Fund*
Funding from lotteries will be made available to encourage com munity projects that enhance resource productivity and environmental quality such as tree planting, wetland conservation and fish habitat restoration.

• *Habitat Enhancement Land Use Program (HELP)*
HELP is an incentive program for farmers to maintain and develop waterfowl and other wildlife on their lands. Sponsored by Wildlife Habitat Canada, Ducks Unlimited and Manitoba Department of Natural Resources.

• *Heritage Marshes Advisory Board*
Is in the process of forming a Turtle River Marsh Task Force to develop a plan to restore the once productive Turtle River Marsh.

What Should We Do?

The following options are not necessarily the only, or the best, choices for reclaiming the basin.

However they are representative of initiatives and projects suggested in basin studies and investigations, and are described here to serve as a starting point for discussing nuts and bolts measures for reclaiming the basin.

Whether these or other options are selected, there is a strong likelihood that *any projects* will prove successful only if basin residents and involved jurisdictions help put them into effect. This is particularly true of programs involving the land, since much of the basin is privately owned.

Headwater Retention

Small dams in upstream sections of drainage basins can reduce downstream channel peaks, channel erosion, and sedimentation.

Fish Spawning Habitat

A major factor in the decline of the Dauphin Lake fishery is the loss of spawning habitat.

This program would seek to regenerate or replace lost habitat by:

- protecting and replacing riparian zone vegetation
- prolonging spring and summer stream flows
- constructing in-channel pool and riffle sequences.

The Mossy River Dam regulates water levels on Dauphin Lake

Dauphin Lake Regulation

For sustainability of Dauphin Lake the upper control limit should be increased from 854.3 feet ASL to 855.3 feet ASL.

This program would involve seeking funding and approval to:

- compensate individual landowners affected by the 1-foot difference
- enlarge the upper 8-mile portion of the Mossy River to accommodate the upper control limit.

The additional foot would benefit water quality, fish and wildlife habitat, and recreational use.

Water Quality Monitoring

Such a program has already been established; however, expansion of the monitoring network is required to determine where water pollutants are coming from and in what quantities.

Expansion of this program would help measure the success of water quality improvement programs throughout the basin, for overall program accountability and proof of its effectiveness.

Sediment Monitoring

The greatest factor contributing to the deterioration of Dauphin Lake is siltation. Monitoring of sediment flow into Dauphin Lake is needed to determine current rates of sedimentation and to judge the success of the proposed erosion control measures.

THE EFFECTS OF PROSPECTIVE OPTIONS ON THE KEY ISSUES IN THE DAUPHIN LAKE BASIN

PROSPECTIVE PROGRAM	LAKE REGULATION	SILTATION	WATER QUALITY	FISHERIES
Headwater Retention	○	◗	◗	○
Fish Spawning Habitat		◗	○	◗
Lake Dauphin Regulation & Crown Land Management	●	○	◗	◗
Water Quality Monitoring		○	○	○
Sediment Monitoring		◗	◗	◗
Velocity Control Structures		◗	◗	◗
Turtle River Marsh		○	○	●
Stream Riparian Zone		◗	◗	◗
Marginal Agricultural Land	◗	◗	○	
Recreational Enhancement				
Alluvial Fan Management		◗	◗	◗
On-Farm Runoff & Erosion Control		●	●	●
Edwards Creek Silt Trap		●	◗	◗
Basin Research	○	○	○	○
Conservation Education		◗	◗	◗
Basin Awareness Centre	○	◗	◗	◗
Public Consultation	◗	◗	◗	◗

LEGEND

● *Major Effect* ◗ *Medium Effect* ○ *Little Effect* *No Effect*

Past studies of sediment deposition into Dauphin Lake concluded in 1980 and up to date information on sediment rates is now required

This initiative would seek to establish monitoring stations along all the major tributaries in the Dauphin Lake Basin. Such monitoring would not only provide the baseline data needed to judge the effectiveness of erosion control measures but would also isolate particularly vulnerable reaches of waterways needing special erosion control measures.

Velocity Control Structures

Gradient control structures on man-made municipal drains brake flow velocities and reduce channel erosion, particularly in the alluvial fan areas along the foot of the escarpment as has been demonstrated at Wilson Creek.

This program would involve finding and developing sites for velocity control structures, particularly on tributary streams. Edwards Creek and Crawford Creek are likely candidates.

Crown Land Management

This program would seek a moratorium on sales of Crown Land throughout the basin. The Crown should retain ownership of marginal agricultural land which is subject to flooding.

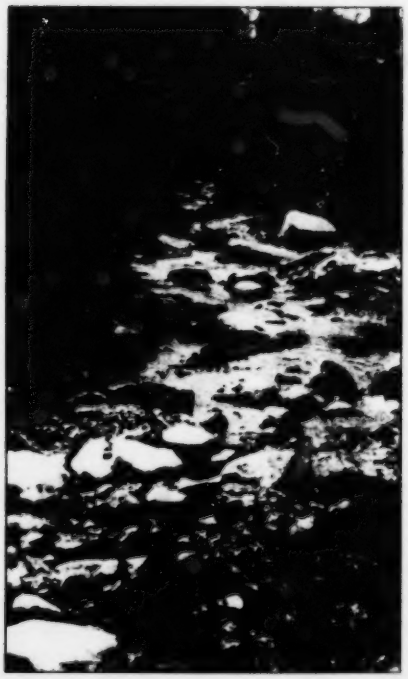
It would also encourage the current practice of directing the use of Crown Land in ways that benefit the basin. It is more practical for the government to discourage development of marginal lands, and preserve them for more beneficial natural uses such as waterfowl habitat.

What Should We Do?

Stream Riparian Zones

Streams in the basin are increasingly being forced to flow in straighter and narrower channels. Channels are sometimes stripped of vegetation, and cattle range through them, degrading the waterway and destroying natural habitat.

This program would see development of demonstration sites, and a plan for managing habitat along streams throughout the agricultural portions of the basin.



Gradient control structures, headwater storage and stream riparian zones would help reduce the serious erosion problems in the basin.

Turtle River Marsh

This program would see:
• designation of Turtle River Marsh as a heritage marsh
• enhancement of wildlife habitat by regulating water levels in separate parts of the marsh.

Marginal Agricultural Lands

Under this program the province and other agencies and interest groups would try to buy privately owned farm land that is agriculturally marginal or sensitive to erosion, flooding, and salinization. These lands would be put to uses compatible with the long-term goals for the basin.

In preparation for raising the upper control limit on the lake, buying or obtaining easements on low-lying land around the lake could begin.

Recreational Enhancement

When growth of the Edwards Creek Delta in Lake Dauphin blocked boat access for cottagers at Dauphin Beach, the cottage owners constructed a boat channel to reach the lake. Upgrading and maintaining the boat channel would be the focus of this program.

Alluvial Fan Management

Historically, alluvial fans at the base of the escarpment have provided water storage capability, both surface and subsurface, and have acted as silt reservoirs.

Drainage and other stream development activities have increased runoff flow through the fans and have resulted in the lowering of aquifer levels and increased erosion. The fans no longer hold the runoff that recharges local aquifers. The silt that formerly settled and formed these fans is now carried farther downstream and much of this silt settles in Dauphin Lake.
A moratorium on stream and drain development activities in the alluvial fans would allow the fans to work towards re-establishing themselves. Other initiatives such as gradient control structures, headwater storage sites and re-routing of existing drains through the alluvial fans would have the effect of reducing erosion and the accompanying problem of downstream siltation.

Control of On-Farm Runoff And Soil Erosion

Soil washing off basin farmlands clogs drainage networks, lowers water quality and is eventually deposited in Dauphin Lake. This program would be aimed at promoting soil and water conservation techniques to prevent wind and water erosion and slow down runoff. Specific initiatives could be downstream demonstration projects or incentives to promote grassed waterways, shelterbelts, stripcropping, conservation tillage techniques, buffer strips, forage seeding, field barriers, runway construction and measures to reduce the rate of runoff from farm fields.

Basin Research Project

The 3,250-square-mile Dauphin Lake basin provides an ideal research environment, with its range of resource problems and potential solutions.

Shelterbelts are one of the most effective means of controlling on-farm soil erosion.

This program would attempt to obtain money and participation from the Federal and Provincial Governments and various private agencies to establish a joint research project on remedial management of the basin.

Edwards Creek Silt Trap

The existing sediment trap (basin) on Edwards Creek adjacent to PTH #10 south of Dauphin has been filled to capacity since the mid 1970's. This sediment trap was constructed to reduce the silt load carried into Dauphin Lake from the watershed upstream of PTH #10.

Two possible short term solutions to make this sediment trap effective once again are:

1. Cleaning out the trap
2. Building dykes around the perimeter to increase the trap's capacity

A more effective means of reducing the silt from Edwards Creek into Dauphin Lake is the establishment of a sediment trap immediately north of the

Edwards Creek channel outlet into Dauphin lake. The diversion of Edwards Creek through this man-made sediment trap would work similar to a marsh at the mouth of a natural river.

Basin Awareness Centre

The water that flows out of Dauphin Lake comes from throughout the basin. Similarly, the solutions for the problems on Dauphin Lake must come from throughout the basin.

The proposed Centre would also serve as an office for the Conservation Education program manager.

Conservation Education

This program would maintain a poster display of resource conservation principles and practices.

Effort would also be directed to educating livestock operators on the impacts of runoff from their operations and on measures available to minimize effects of such runoff.

A full-time program manager would be retained to circulate the poster display throughout the basin — at high schools, community fairs, festivals, and other public gatherings.

Public Consultation

This program would establish a regular format for keeping residents posted on progress, and for obtaining public input.

Area residents would be encouraged to share their knowledge of the area at regular public meetings scheduled and advertised throughout the program.

Educational workshops, such as this one at Wilson Creek, would help resource managers and resource users understand the problems affecting the Dauphin Lake basin.

What happens next?

This report is not an action plan. It is a summary of more than 30 years of studies and investigations into ways and means of arresting further decline of the Dauphin Lake Basin and turning it around.

The key issues, potential resources, possible solution and some of the players have been identified. With a concerted planned effort involving all the players, we can produce the desired result.

Some Players in the Dauphin Lake Basin

Basin Residents

- Individual Land Owners
- Land Operators
- Businesses
- Rural Residents
- Urban Residents
- Students

Rural Municipalites

- Dauphin
- Grandview
- Gilbert Plains
- Ochre River
- Ste. Rose
- McCreary

Towns/Villages

- Ste. Rose du Lac
- McCreary
- Grandview
- Dauphin
- Gilbert Plains

Cottage Committees

- Oako Beach
- Dauphin Beach
- Crescent Cove
- Stoney Point
- Christensen Beach
- Laguna Beach
- Ochre Beach

Other Agencies

- Ducks Unlimited
- Manitoba Wildlife Federation
- Keystone Agricultural Producers
- Dauphin Chamber of Commerce
- Ste. Rose Planning District
- The Manitoba Habitat Heritage Corporation
- Turtle River Watershed Conservation District
- East Parkland Development Committee
- West Parkland Development Committee
- Dauphin Opportunity Centre
- Lake Dauphin Commercial Fisherman's Assoc.

Government Organizations

- Manitoba Fisheries
- Manitoba Parks
- Manitoba Water Resources
- Manitoba Lands
- Manitoba Environment
- Canadian Wildlife Service (Federal)
- Manitoba Regional Services
- Prairie Farm Rehabilitation Administration (Federal)
- Manitoba Wildlife
- Manitoba Forestry
- Manitoba Agriculture
- Manitoba Rural Development
- Dept. of Fisheries & Oceans (Federal)
- Riding Mountain National Park (Federal)
- Manitoba Culture Heritage & Recreation